FORUM
Journal of the International Association for Group Psychotherapy and Group Processes

Special Issue: *The 2nd IAGP Research Congress in Thessaloniki, Greece*
Dosier Especial: *Conferencias del II Congreso sobre Investigación en Tesalónica, Grecia.*

The Mirror Neuron of Agapi (Love) and Trauma in Psychotherapeutic Groups and the contribution of the Forgiving Process

La Neurona Espejo del Agapi (Amor) y el Trauma en Grupos Psicoterapéuticos y la Contribución del Proceso de Perdón

Catherine Mela (Greece)

Dr Catherine Mela, MD.
Neurologist-Group Analyst - Researcher.
President of the 2nd IAGP International Research Congress (Thessaloniki, Greece, June 2019) IAGP Vice-President.
Chair of IAGP Research Committee.
Staff member of the Summer Academy of Granada.
Member of Cambridge Editorial Advisory Board.

catherinemela@gmail.com

Abstract
From the beginning of life, a complex immune-biochemical dialogue is established in the brain, influenced by maternal experiences and the Social Unconscious.
Trauma leaves traces in memory, either by its explicit or implicit transcription, psychologically experienced either as a conscious event or as an unconscious, blind and violent disorder, especially when the traumatic quantity overwhelms the Psychic Apparatus.
The group factors interacting among different countries and cultures will be explored in relation to trauma's treatment and transformation in the group.
Trauma's maintenance and transformation through generations, creates wounds in time, space, boundaries, trans-generationally influencing our genetic, ethical and national heritage.
Psychotherapeutic factors like Agapi (Love), acceptance, containing, holding, gratitude, equal human-rights, transcultural and trans-religious-dialogue, corrective emotional experience and forgiving process are group parameters with impact in trauma's healing after alteration of the Brain Plasticity.
The forgiving process served as a marker in the evaluation of trauma's transformation by investigating the relationship between forgiveness, likelihood forgiveness and transgression-related interpersonal motivations using Pearson's correlation coefficient.

Keywords
Trauma, Brain Plasticity, Forgiving Process, Group Psychotherapy.

Resumen
Desde el comienzo de la vida, se establece un complejo diálogo inmune-bioquímico en el cerebro, influenciado por las experiencias maternas y el inconsciente social.
El trauma deja huellas en la memoria, ya sea por su transcripción explícita o implícita, experimentado psicológicamente como un evento consciente o como un trastorno inconsciente, ciego y violento, especialmente cuando la intensidad traumática abruma al Aparato Psíquico.
Los factores grupales que interactúan entre diferentes países y culturas serán explorados en relación con el tratamiento y la transformación del trauma en el grupo.
El mantenimiento y la transformación del trauma a través de las generaciones, crea heridas en el tiempo, en el espacio y en los límites, influyendo transgeneracionalmente en nuestro patrimonio genético, ético y nacional.
Factores psicoterapéuticos como Agapi (Amor), aceptación, contención, sostén, gratitud, igualdad de derechos humanos, diálogo transcultural y transreligioso, experiencia emocional correctiva y proceso del perdón, son parámetros de grupo con impacto en la curación del trauma después de la alteración de la plasticidad cerebral.
El proceso de perdonar sirvió como marcador en la evaluación de la transformación del trauma al investigar la relación entre el perdón, la probabilidad del perdón y las motivaciones interpersonales relacionadas con la transgresión, utilizando el coeficiente de correlación de Pearson.

Palabras clave
Trauma, Plasticidad cerebral, Proceso de indulgencia, Psicoterapia grupal.

INTRODUCTION - HYPOTHESIS

The consideration of the individual mind not as a thing but as a network of interconnecting processes which interact in the communications network of one or many groups will be explored in this research project, also indicating the ways in which it emerges from the group matrix and the group dialogue, thus proposing a model of the internal mental and emotional process for the clinical approach and the healing of trauma.

Since our minds, according to Sheldrake, have a past, from which experiences operate and seek a meaningful adaptation in present environment, an attempt to further explore how sharing the traumatic experiences during 4-5 days inside a group analytic psychotherapeutic group and among other groups, was attempted during the annual meeting of the Summer Academy of Granada and the 1st IAGP International Research Congress, Athens 2014.

The individual mental life is experienced as a container of personal experiences and meanings, partly conscious and additionally affected by the personal and the collective unconscious. In the "Culture of Forgiveness" the history of trauma develops in relation to the past, its genesis and its future expression and resolution, thus separating the present from the past, the healthy part of the Ego from its suffering one. Especially nowadays, when trauma appears in many dimensions of our life (epidemiologic, physical, organic, political, social, financial), trauma's pathogenesis and its characteristics are fundamental in the explanation of its maintenance and its transformation through generations.

From the womb, the beginning of our life, , the endometrium, a very complex biochemical dialogue is established between mother and baby related with the current and the past maternal experiences, her relationships and memories and the social unconscious, which is transmitted in the baby's cellular and immunologic memory.

Even before the restoration of the initial representations of the Ego in the prefrontal cortex , it seems that we are carrying our past in ourselves, in our cellular memory. The experiences of relationships from the first months of life shape the way we approach or avoid people (motivational schemas) in an attempt to satisfy the need to be attached to others. An early traumatic experience can have serious mental health repercussions later in life, long after the infant experience referred by Ornstein (1974), who claimed that the mobilization of archaic self-object needs can activate people's earlier childhood traumas.

Even more in our later life, when trauma leaves traces in our memory, we experience trauma either in an explicit way resulting from a conscious, cortical way of the brain function or through an implicit function, which remains unconscious and subcortical. When explicit memory allows it, trauma surfacesto consciousness like a knowledge, but other times it is expressed in a dream or by an unconscious, blind, sudden and sometimes violent way, when implicit memory's dysfunction releases a huge traumatic load which cannot be contained, bound and digested, thus overwhelming the psychic apparatus. The localization of trauma often results in a compulsive repetition of the same problematic situations, thus leading to a repetition of the trauma itself.

Within the psychotherapeutic group, the traumatized Ego of the participant usually remains silent, like an iceberg: few characteristics of the personality allow the clear expression of trauma and many hidden and associated feelings are subconsciously or unconsciously expressed, which can be modified through the years by later life experiences, thus losing its initial origin.

Many times, after the experience of the psychic trauma, the representation of the traumatic experience occurs and its structuring transformation disorganizes the psyche; in the pre-psyche or early trauma, such transformation does not function, there is only a sensorial mark that emerges with a compulsion to repetition, seeking binding or meaning. This lack of representation leads to a state of helplessness and to the loss of the Ego identity.

More severe dissociations within the non-verbal elements of emotion schemas, as the ones occuring in post-traumatic states, can result in states of prolonged activation of many sub-symbolic processes within upsurges of emotional arousal, that are beyond the person's capacity to self-regulate (Aisenstein & de Aisemberg, 2010).

From a neuropsychological perspective, rapid, implicit right brain-to-right brain non-verbal body-based, affective communications (facial expressions, tones of voice, and gestures) convey unconscious transference–countertransference transactions, which revive earlier attachment memories, especially the ones related to intensely dysregulated affective states.

In PTSD, we imagine the associative processes, uncontrolled by regressed executive functioning, that permit memories of old and new injuries to combine (Bernstein, 2011), when mind-brain is demanding the conscious attention be focused on the injury, thus leading to an important growth through the re-conceptualization of the self attributes.

This brain-mind bond, which is not constantly attempting to suppress concepts and memories, can easily learn to "turn-off" signals from pain neurons, to cut the neuron communication, in the same way that a traumatized person does from its social environment after resignation and isolation.

Trauma can provoke wounds of time, of space, of boundaries, of nations as well, which can be carried trans-generationally as a genetic DNA or an ethical, national heritage.

Patric de Mare, in his book "Koinonia", has described the process of the transformation of hate into thinking, occurring through dialogue inside a group, thus providing a potential technique for renegotiation of post traumatic neuroses, orongoing hostilities where they have to co-exist with enemies of all kind, where this gap is filled with hate, prejudices, judgmental positions, cultural stereotypes blocking communication, curiosity and questioning, often creating the space for aggressive, destructive expressions. Kleinot mentioned that only by the process of Mourning "the two sides" can humanize each other, which is the major step in conflict resolution and in pain deal.

Group Analysis highlights communication as a major therapeutic factor, since the small group contains the cultural and the traditional elements within which individuals are born. Feelings and thoughts, when shared in the Group, modify inscription, transcription and association of traces left in memory by past traumatic experiences, thus influencing the mechanisms of synaptic plasticity and the brain hemispheres function, via theinfluence of our Social Synapse.

According to Pines (1966), elements of culture, politics, religion, financial and historic conditions are shaping the Self.

The small Group-analytic group could be viewed in such a way where each member of the group is part of multiple other subgroups (political, professional, familial, national etc.) thus creating the Group Self of a Community where it belongs. Group members actively participate in making the Self understood and in understanding communications of others. The transition from the personal experience to Knowledge and to the Theory of Group Therapy enriches each member with knowledge and information in the trauma treatment and the conflict resolution. The wounds of the past can cast a very long shadow, transmitted by mechanisms of turning into opposite, denial and projection through generations of a heavy weight which start to live its own life.

MATERIAL-METHODS- SCALES

In this retrospective approach and research, all the factors and the processing functions which are interacting in different kinds of groups (small, median and large) among different countries and cultures, have been evaluated in relation to the ways that trauma have been experienced, healed or transformed in a combination of groups, with reference to the brain's plasticity modification within the group.

These groups have been gathered in parallel with lectures and workshops focused on the neurobiological approach of trauma during the 5 days of the Academy and of the Research Congress. Psychotherapeutic factors such as acceptance, containing, holding, gratitude, equal human rights, transcultural and trans-religion dialogue, corrective emotional experience and forgiving process, were evaluated among others and considered as important parameters which contributed to the transformation of trauma. The forgiving process has been mainly explored and used as a marker for the evaluation of its contribution to the transformation of trauma.

Our Research method has been designed according to the following methods:

1. A Small Experiential and a Median Group Analytic Group everyday, conducted by one or two conductors, following lectures and workshops on topics related to the neurobiological aspect of trauma. All the groups had 90 minutes duration and had been conducted by 2-4 group leaders (the median group has been conducted by 2-4 leaders, in rotation, using the group analytic technique).
2. A Large Group of 90 minutes duration, each day, had been conducted by 2-4 conductors, in a rotation or in combination of different techniques (Psychodrama, Group Analysis, Organization Consultancy).
3. A survey on the forgiving process, based on the use of the forgiveness scale, the forgiveness likelihood scale and the transgression relation motivation inventory has been distributed to more than 328 participants (the duration of the research was 2 years). The evaluation of the work on trauma and its treatment by the procedure of forgiving process has been attempted at the end of the sessions of the group.
4. Participation in other activities of the Academy and the Congress (such as lectures, workshops).

In this frame we have tried to evaluate the following parameters:

a. the qualitative and quantitative approach of the neuro-bio-psychotherapeutic factors in the transformation of trauma.
b. the forgiving process.

This protocol has been followed for 2 years during the 5 days -each year- of the Academy and the 4 days of the IAGP Research Congress.

The questionnaires were distributed to more than 328 participants who took part in the workshop,the small experiential group of the workshop and the Large

Group of the Academy. The questionnaire on the "The Neurobiological Approach of Collective Trauma and its resolution by the procedure of Forgiving" has been organized in 4 sub-questionnaires:

1. a multiple quiz,
2. two scales and
3. an inventory.

On each questionnaire, allquestions had a name corresponding to a variable. All the questions were valued as 5 scaled Likert, on a scale of 1 to 5,i.e 1 for Strongly Disagree, 2 for Disagree, 3 for Neutral, 4 for Agree, 5 for Strongly Agree. The correlation of the measurement results of the scales between them and of each one against the inventory has been measured and evaluated.

The aim of the study was:

- To highlight the brain circuits involved in the creation, maintenance and restoration of the traumatic experience and to describe the ways that the forgiving process could lead to their modification by neuron regulation
- To introduce the participants to the "culture of forgiving"
- To correlate the above with the "here and now process" of the group
- To show the transition from members' personal experience to the group's reality, on a neurobiological and psychotherapeutic basis
- To enrich each participant with knowledge regarding the Trauma Resolution by the Forgiving Process
- To highlight the therapeutic factors of Group-Analytic Therapy related to the Forgiving process

The aim of each workshop on the neurobiological approach of trauma focused on the following:

1. Creation of a Group Psychotherapeutic group to approach the culture of forgiving
2. Psychoeducation
3. Human and Social Intervention in the Group Psychotherapeutic context
4. Training and Psycho-education on a neurobiological basis

The following scales (upon which the design of the questionnaire was based) have been used for this research

1. Forgiveness Likelihood Scale from : Rye, M. S., Loiacono, D. M., Folck, C. D., Olszewski, B. T., Heim, T. A., and Madia, B. P. (2001). Evaluation of the psychometric properties of two forgiveness scales, September 2001*Current psychology (New Brunswick, N.J.) 20*(3):260-277
2. Forgiviness Scale from: Kamat, V. I., Jones, W. H. and Row, K. L. (2006). The Forgiving Personality Scale. *Assessing forgiveness as a dimension of personality. Individual Differences Research, 4(5), 322–330.*
3. Transgression-related interpersonal motivations inventory from: McCullough, M. E. (2013) . Transgression-Related Interpersonal Motivations Inventory (TRIM-18) . Measurement Instrument Database for the Social Science.

RESULTS

The relationship between forgiveness (as measured by the forgiveness scale), forgiveness likelihood (as measured by the forgiveness likelihood scale), and transgression-related interpersonal motivations (as measured by the transgression-related interpersonal motivations inventory) was investigated using Pearson correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a medium positive correlation between the variables of forgiveness and forgiveness likelihood, r = .48, n= 20, p < .05, and a strong, negative correlation between the variables of forgiveness and transgression-related interpersonal motivations, r = -.51, n= 17, p < .05. There was no statistically significant relation between the variables of forgiveness likelihood and transgression-related interpersonal motivations.

- Thisresult proved that the realistic approach and the pragmatic consideration of the traumatic experience -in the way that is treated and faced inside the psychotherapeutic group- is more helpful in the forgiving process than the likelihood approach.

At a psychosomatic level, the group results rendered the following models:

1. **educational value** of the participation in groups – along with participation in lectures and workshop – where each member has been reinforced to face its traumatic problem, to metabolize it and to treat it through dialogue.
2. **supportive value** between members by their participation in the small group, thus giving chance to "tell it to someone", to work on shame and guilt and to avoid isolation and resignation.
3. **neuro-immunological value** of **brain neuro-stimulation, neuro-modulation and feedback**, so that subconscious experiences could have access to conscious mechanisms for further work on trauma.

THE GROUP PSYCHOTHERAPEUTIC FACTORS THAT CONTRIBUTED TO THE HEALING OF TRAUMA

Group matrix and network communication

Group matrix showed that the communication in the group and the related network contained some elements of which the biological and the cultural heritage consists and that the individuals have in common. These elements interacted in the communications of the network of different groups, or inside each group, with impact in the group dialogue of the whole community (Academy, Congress).

The skin of the maternal boundaries of the group reproduced a new "skin" (skin plasticity) in the brain, in the body and in the Self, establishing a space for new healthy relationships to be developed between the Self and the others.

Holding

Holding each member inside the group has given each member the needed safety to to freely express, and for the birth of a "new play" of neurotransmission to occur (cellular plasticity). The members were free to explore their trauma related feelings of guilt and shameto learn how to contain the traumatic experience in their memory. "Belonging", safety and acceptance created a safe place for a new synthesis of mental control.

The group as a container

It has been mentioned that the neurons of the baby's brain, developing alongside the brain synapses, crossed by the tiny electric currents that convey information from one neuron to another, and the vast ever increasing complexity of these is considered as the unseen glory of every individual!

In the absence of a baby's container high levels of cortisol are released, that might expose the child to somatic and psychic pain, thus creating new somatic or psychological trauma. The cortisol level in the baby brain is strongly related to its needs and demands and the presence or absence of a container.

Can we really live our life without the existence of a container, and how can we contain our inner and external conflicts, during life?

The group as a "container" not only lead to "the reverie of a new neuro-modulation" and to the creation of new neuron-representations (neuron plasticity), they were also instrumental inthe creation of a relaxing ambience where stressful memories and associated painful feeling were managed. During traumatic events neurotransmission remains "frozen".

What was "traumatised", "wounded", "broken" inside the group,, became more mature and better contained and metabolised thus leading to more concrete trauma related thoughts, feelings and behaviour, on the basis of clarification, holding, containing and interpretation of the traumatic experience at an unconscious level,. All group members were able to participate in the process of transformation and change, of adaptation to the dynamics of the situation and to the new encounter with Self.

The rhythms of the group discussion renew our brain and the social synapses with the Self and of the Self with Others, thus creating a new setting that has been described by Patric de Maré (1990) as a "Movable Container".

Dialogue

In the milieu of the group-analytic matrix, through dialogue (verbal or non verbal) and with safe relationships and bonds between members and through a personal, transpersonal and inter-transpersonal communication, trauma has been faced according to the internal world of each member, their internalized relationships and their further modification by the familial, social, physical and political structures.

Through dialogue, Ego resistances decreased and the free expression, the discussion of trauma created new bridges - beyond personal fears or narcissistic boundaries - to the outside world. Mind and body were faced not as separate entities where the mind do not consist of independent faculties or elements, nor the body by independent organs and processes.

So, mechanisms for the structure and function of the brain emerged, free to be influenced and to be changed by the environment, since brain is always able to regenerate or generate significant functional elements in response to its stimulation. Synapses remain open so that new information may enter and be metabolized (synaptic plasticity).

Balanced brain hemisphere's function

A dynamic reciprocal process occurred in the group, related to the activation and a more balanced involvement of the two brain hemispheres during the therapeutic situation of the group analytic psychotherapeutic group. The brain has to attend to the world in two completely different ways, and in so doing itmerges two different worlds into one.

In cases of trauma, the right brain hemisphere is "frozen" and fails during traumatic situations, since in normal conditions it handles broad attention (what we attend to comes to us firstly through the right hemisphere) by making connections so that we can appreciate the wholeness of dynamic structures and relationships that change over time.

In contrast, the left hemisphere has a narrow attention, it is good at deconstructing things into parts;

and has an appreciation for static, decontextualized, inanimate structures and abstractions.

Mirroring

Mirroring within the group is considered to be a collection of information about self occurring trough social interaction and relationships in the setting of the group. Increase of knowledge and information in the group occurs by:

A. the responses of others to one's own attitude, actions, emotions, relationships
B. observing and connecting with the psychic attitudes, emotions, and behaviours of others.

Inside this network the individual was conceived as a nodal point, in the aspect of an open and not closed system where mirroring is establishing a new brain circuit of understanding as an integrative change and transformation in a field of dialogue and reciprocal communication. Pain connects people and gives chance to the development of trust and the decrease of ego-resistances.

Memory activation and facilitation

Memory is considered a general property of the whole cerebral cortex. The social brain expresses the dimension of the brain activity as it is influenced by the social environment in which human beings develop and mature.

Perception can leave a trace in the nervous system and become a memory, leaving a sign inscribed in the neuronal circuits, one that could be identified by the Freudian concept of the sign of perception.

The brain has mechanisms allowing the perception of the external world, the inscription of these perceptions in the neuronal network and the formation of our memory. Memory is also related to theearly stages of life and the restoration of early experiences in the prefrontal brain lobe and it is formed by different circuits of plasticity that can be differently changed.

Our explicit memory enables us to learn about our environment through knowledge stored in the cortex and mainly involved in the trauma resolution, especially in cases where trauma can be treated and contained at a conscious level.

On the other hand implicit memory enables us to learn about our condition in ways that sometimes are not conscious. It is related to early stages of life and it is formed by different circuits of plasticity that can be differently changed. Behaviour also can be recorded in the implicit memory in an unconscious way.

It is stored in areas close to the limbic system and, when facing a traumatic event or conflict, it can be violently and unconsciously expressed,,usually through an accidental stimulus. It is related to the Social Unconscious.

Treating trauma within the group by sharing experiences, thoughts, dreams and feelings can also activate unconscious mechanisms by bringing implicit memories to light. A connection between explicit and implicit memory can be established, thus inaugurating new brain mechanisms related to the work on trauma.

DISCUSSION

A question emerged during this research is how culture, education and overall psychotherapy could influence the expression of the brain hemispheres in a balanced way, thus negotiating Hebb's hypothesis on the sets of neurons, where a structural model of neural representations corresponds to the elements of external reality. The right brain's activation, which is dominant in the processing of the social and emotional information and for stress responses, is fundamental in this context.

Patients afflicted by "Pensee operatoire", where the function of the left brain hemisphere is dominant also suffer from a mental disturbance, a disturbed psycho function or deregulation where all the work of fantasy is excluded, there is absence of symbolization and lack of mentalization, which is translated mainly by psychosomatic symptoms unrelated to hysteria, according to Pierre Marty and Michel de M'Uzan (Congress of Psychoanalysts , and the "École de psychosomatique de Paris" (IPSO) , Barcelona,1962).

These patients, as it happens in PTSD, have difficulties in expressing and activating their memories and feelings and in working with their conflicts and their resolution. They focus on physicalsymptoms, on being neutral with their Ego, without finding the words to express their feelings, incapable to put their emotions into words. They have no access to their emotions, have difficulties connecting events and their associated feelings, perceive that facts are blocking reality. People with trauma have similar characteristics, since the right brain hemisphere is expressed differently in trauma situations, and trauma situations in early childhood lead to a sub-activation of the right brain hemisphere and the benzodiazepine receptors expression is seriously damaged.

McGilchrist summarizes the "two worlds" of the hemispheres in this way:

The brain has to attend to the world in two completely different ways, and in so doing it has to bring two different worlds into being. In one (the right hemisphere), we experiencethe living, complex, embodied world of individual, unique beings, forever in flux, a net of interdependencies, forming and reforming wholes, a world with which we are deeply connected.

In the other (the left hemisphere) we "experience" our experience in a special way: a "re-

presented" version of it, containing static, separable, bounded, but essentially fragmented entities, grouped into classes, on which predictions can be based.
In the group dialogue activates the left hemisphere to "detect patterns and fill in gaps in the awareness from the past heritage" while dreams, thoughts and free association liberates the right brain hemisphere to feel, imagine and symbolize.

Schilder described as "non-thinking" a body without external world, in the same way as a world can be without bodies. It sounds tragic but the paradox of the brain is that mechanisms allowing the inscription of the experience are those that separate us from the experience. We find an experience, a trace, but we no longer find the initial experience, all the more so because this trace is recombined with other traces according to new laws proper to life.

However, the emerging image can provide a form of coding the representation of a new object and experience due to the modification of a certain number of synapses. These are the neurons of the brain that "suffer", that show "empathy" deeply influenced from our neighbour's neurons, thus helping in the transformation of negative, unpleasant and traumatic feelings. Fear, depression, panic attacks, chronic fatigue, loss of hope and of an existential target , despair, distress, are common feelings in our days, and the suffering of the brain can that lead to immunodeficiency.

In addition, needs that cannot be satisfied, demands influenced by a traumatic experience, anger for frustration of future plans leads to a conflict that increase distress and anxiety. The distance between the need and the demand is dramatically different, in the case of a vicious circle of revenge occurring in a situation of a communal circle with others. Chronic severe negative stimuli do not only destroy the brain-mind equilibrium, they also lead to over secretion of cortisol, catecholamine, CRH factor, thus provoking a bad turning point in our health, even in spite of a strong and healthy genetic environment or of a happy childhood .This is a poor prognostic for our future and it occurs when a container of our needs and anxieties is absent or destroyed (family, community, caregiver environment, church, nation).

When the vicious circle of the dopaminergic feedback, the CRH and catecholamine is decreased in the brain and the body, stress can be relieved and reduced inside the container of the therapeutic group. Many diseases such as pseudo-dementias, epilepsy, cancer can be considered and treated as a PTSD expression and they are strongly related with traumatic circumstances of loss, emerging not only as a result of the degeneration of the "object relationships", but also as a result of the subsequent degeneration of the nervous tissue occurring per se as a consequence of overwhelming stress and cortisol levels and other associated negative feelings. Without of course ignoring the contribution of our DNA heritage, stress leads to the degeneration of neurons. Repetition of trauma can create an ambience of mitosis as well with severe oncogenic results.

The pre-frontal lobe, which is our "memory library" connected to the Ego formation in later life, is an anatomic brain region related to the dopaminergic circuits. So, the activation of implicit memory within the group recalls unconscious events that influence the pre-frontal cortex, the way of thinking, but also the formation of many current needs and demands, where unconscious past experience and traumas reside. Plasticity of neurons shows that the neuronal network remains open to change within the group, enabling the brain to register, in a lasting way, pieces of information coming from our environment, making so that the experiences undergone by each individual leave a trace in the neuronal circuits.

The individual forms a mental image of something that was unidentified due to biological obstacles restoring the feeling at a sub-cortical level and not at a higher cortical (conscious) one. Interpretation could help in the transformation of an event "left" in implicit memory to its explicit form. The translation of the dialogue into the neuroscientific language of neurotransmission can lead to the creation of new brain circuits that replace the old, pathogenic, maladapted ones.

Coping mechanisms might get exhausted on personal and much wider levels when facing trauma, when there are limits to the possibilities of adjusting to new terrorist attacks, armed assaults, and many other forms of threats to the bare human existence.

CONCLUSION

It is essential for the brain to be re-activated following a traumatic experience or its memory, to start to interact again with its environment, to establish a dimension of a renewed plasticity between brain and its neurons (psyche plasticity) and to be modified at all levels - structural and processual – according to its external stimuli and needs. This dialogue hinges on a new way of neurotransmission, a new dialogue of energy between neurons and channels of ions in the cellular membrane and a dialogue of hormones in the whole body.

According to Foulkes man is a social being and can only be understood as such in the context of his environment. Even individual mind reflects and represents the social model where he lives and this is a complex network of interacting processes (communications) issuing from the neuron synapse that is the meeting point of the brain to the Social Synapse, the meeting point inside the group. In the group new

patterns of relating emerge on a more mature basis, as a meeting point of the creative needs of the individual and for the collective creativity of the group. The sense of "we-ness", "us-ness", is created by the "executive we".

The personal mind is capable of interacting processes, thus in the group what is reproduced is basically the matrix of involving personality. Analytically the individual mind is an objectification (or model) of an internal mental and emotional process.

The meanings of "holding" (Winnicott) and of "containing" (Bion) in the group are strongly related with the group matrix and the facing matrix as the place of realization of dreams, thoughts and delusional thoughts. The group conductor can understand "acting-in" phenomena occurring during sessions.

Facts and thoughts occurred in the group can be observed as a result of the transference and transference results from the process of projection and re-introjection of infantile object relationships, leading to a fantastic world which is re-experienced during adulthood.

All the Ego defense mechanisms such as multiple projective identifications, denial, "split-brain" multiple transferences are analyzed after becoming conscious in the group and the Ego takes account of the Superego (which is a social structure) and of the external reality. Malcolm Pines says that the group has the potentiality to develop as a maturational environment, reducing the need for defensive patterns which are being built as defenses against anxiety.

He also claimed that if a group is given the opportunity for, and the task of, achieving spontaneous communication, the characteristic rhythm of contingency analysis seen in early childhood may be re-experienced. All group members are in the process of change, of adaptation to the dynamics of the situation and to the new encounter with self. The response to the task is what Foulkes called "ego training in action".

Prof. Rocco Pisani pointed out that the interaction network means that the individual intrapsychic equilibrium is structurally linked to the equilibrium of the interpersonal relations and that every break-down or individual alteration involves a breakdown or alteration in the entire network and vice-versa.

Patric de Maré described the brain as "matter", from the latin word "mater", with reference to "mother". which is somatic, phyletic and instinctual. He discriminated brain from mind, which is spiritual, erotic and thinking.

Brain and mind produce "praxis". Brain, mind and dialogue lead to the therapeutic approach of the biological organism through its group coexistence and function. It becomes clearer now that a common model, ("prototypon") characterizes the transition from the "Macrocosmos" of *Koinonia* to the "Microcosmos" of the biological organization of the human being. The neuron web, that is to say, the neuroanatomic expression of the matrix provides the holistic perception of the biological organism for the out-corporal somatic space.

The psycho-neuro-immunologic pathway through a complex chemical code of communication reflects the group synthesis and structure of the Human Nervous Tissue and spontaneously provides human living, function and evolution in a group biological and social dimension. According to Koukkou & Lehmann's model, a complex living system is as entity composed of a set of organs (its subsystems) which during life are in a continuous and dynamic interaction with each other. Likewise, complex living systems, including humans, are subsystems of the physical and social realities in which they live and they are in a continuous and dynamic interaction with these realities, that are their natural companions. Behaviour in each moment during life of each living system presupposes these complex and parallel interactions and emerges out of them.

In a therapeutic milieu with all the characteristics of an Academy or a Congress as a Community, it is forced by the social environment, creating new bridges between the members based on the principles of group analysis and group psychotherapy, where trauma can be healed and problems can be solved, leading to a creative and integrating dialogue producing many solutions.

The new web that emerges is strongly related with the integrative maternal equivalent of the psyche according to Roberts (1982), Glenn,(1986), Nitsun (1989) and directly leads to the neuron analogue of Foulkes, where its group member is a nodal point, like a neuron, with expression in the brain and through the brain (Foulkesian Social Brain) in a:

1. neuro-anatomic analogue (cellular sublevel. Synaptic, neuron)
2. quantum analogue (Quantum Brain)
3. Neuro-immunologic analogue of neuromodulation, where each member is reinforced and spontaneously modified from the web in which it participates in corporal (brain, neurotransmission) and out corporal (the group as a whole)
4. Human analogue (according to the model of Koukkou & Lemmann).

Foulkes's dimension of the social brain is the result of the reciprocal influence of the personal matrix with the group matrix, in other words of the influence of the personal mind in the group. This dimension forms a web of interacting neuron connections, with standard activity of energy and complex neuro-chemical participation.

Vamik Volkan has pointed out that the historical shared

heritage, particularly when it involves significant social trauma, becomes part of the individual's narcissistic equilibrium. Social trauma coalesces with personal trauma and narcissistic frustrations and these may reinforce each other.

From individual psychopathology we have learned that the only way to escape the traumatic vicious circle is an internal process of recognition, of identification with self and other, with victim and aggressor. Only by a process of mourning the split between these representations can be overcome, thus leading to the resolution of that identification, in aneffort to bring about resolution of the damage provoked by the trauma, even a reconciliation with an erstwhile enemy.

The lack of mourning process resolves a historic past traumatic experience as well as the danger of the repetition of the trauma. The "here and now" situation of the Group Analytic Situation gives the opportunity to the current Self to reach the Self of the past. This is achieved through projection of the present time implicit self into a reconstructed situation of how it looked many years ago.

Plasticity determines and is determined, liberates human brain from the dimension of a static organ, thus leaving the brain open to changes. It becomes a complex integration of the genetically determined nature to what will be psychologically and environmentally influenced.

To give a social example, a humanistic environment is a precondition of the resolution of social trauma, in the same way that a democratic group could be the place of resolution of personal (psychological and somatic) traumas.

Matrix implies the model for the transmission from "macro-cosmos" of "Koinonia" to the "micro-cosmos" of the neuron transmission and neuron modulation. Brain through Dialogue is creating - and at times is translating - complex biochemical codes of the brain to words through social dialogue.

Group psychotherapeutic factors based on Agapi (Love) within the group, such as empathy, acceptance, containing, gratitude, holding, equal human rights, transcultural and trans-religion dialogue, corrective emotional experience and forgiving process, are fundamental parameters of the psychotherapeutic group, with strong impact to the transformation of hate and trauma ,to the modification of the Brain-immune Plasticity, that reduces stress and reinforces immunity and self-tolerance.

These characteristics are bound-up with the concept of the group matrix, that is the operational basis of all relationships and communications. Inside this network the individual is considered a nodal point, in an aspect of an open and not closed system and in an accordancee with its brain architecture, harmoniously corresponding to the brain balance in the ambience of a movable container that satisfies needs and reduce anxiety, thus contributing to the healing and treatment of Trauma.

NOTE: I would like to thank IAGP for giving me the chance and the honour to organize and to lead the 1st and the 2nd IAGP International Research Congresses. This presentation is a part and a result of this effort.
Many thanks to our Past IAGP President and Chair of the Academy of Granada Dr Jorge Burmeister and Prof Ivan Urli, who collaborated and supported this research but also to all the conductors of all groups who worked so hard with me for this outcome.

REFERENCES

Ansermet, F., & Magistretti, P. (2018). *Biology of freedom: Neural plasticity, experience, and the unconscious.* Oxfordshire, UK: Routledge.

Anzieu, D. (1999). The group ego-skin. Group Analysis, 32(3), 319-329.

Bernsten, W. M. (2011). *A basic theory of neuropsychoanalysis.* London, UK: Karnac Books, Ltd.

Britvić, D., Radelić, N., & Urlić, I. (2006). Long-term dynamic-oriented group psychotherapy of post-traumatic stress disorder in war veterans: prospective study of five-year treatment. *Croatian Medical Journal, 47(1), 76-84.*

Clark, A. J. (2005). Forgiveness: a neurological model. *Medical Hypotheses, 65(4), 649-654.*

De Waal, F. B. (1989). *Peacemaking among primates.* Cambridge, MA: Harvard University Press.

De Maré, P. D. (2002). The millennium and the median group. *Group Analysis,* 35(2), 195-208.

De Maré, P. B., Piper, R., & Thompson, S. (Eds.). (2018). *Koinonia: From hate, through dialogue, to culture in the larger group.* Oxfordshire, UK: Routledge.

De Maré, P. (1994). The Median Group Kith, Kin and Koinonia. *Unpublished article.*

Edelman, G. M. (1992). *Bright air, brilliant fire: On the matter of the mind.* New York, NY: Basic Books.

Fatguiere, J., Villiner, J., & Kaes, R. (2000). *Le jeu dans l'espace psychique groupal.* Toulouse, France: Érés.

Foulkes, S. H. (1964/1984). *Therapeutic group analysis.* London, UK: Allen and Unwin.

Foulkes, S. H. (1948/1983). *Introduction to group-analytic psychotherapy. London, UK: William Heinemann Medical Books.*

Foulkes, S. H. (1975). *Group-analytic psychotherapy, method and principles.* Oxfordshire, UK: Taylor & Francis.
Foulkes, S.H. & Antony E.J (1957). *Group Psychotherapy. The Psychoanalytic Approach.* London, UK: Marsfield Library.

Foulkes, S. H. (1975/1986). *Group-analytic Psychotherapy. Method and Principles.* London, UK: Gordon and Breach.

Foulkes, S.H. (1990) *Selected Papers. Psychoanalysis and Group Analysis*, edited by E. Foulkes. London, UK: Karnac Books, Ltd.

Hoeh-Saric, R. (1998). Psychic and somatic anxiety: worries, somatic symptoms and physiological changes. *Acta Psychiatrica Scandinavica*, 98, 32-38.

Hopper, E. (2003). *Traumatic experience in the unconscious life of groups: The fourth basic assumption: Incohesion: Aggregation/massification or (ba) I: A/M.* London, UK: Jessica Kingsley Publishers.

Kalin, N. H. (1993). The neurobiology of fear. *Scientific American, 268(5), 94-101.*

Kaplan-Solms, K., & Solms, M. (2002). *Clinical studies in neuro-psychoanalysis: Introduction to a depth neuropsychology.* New York, NY: Other Press, LLC.

Kennard, D. (1998). *An introduction to therapeutic communities.* London, Uk: Macmillan.

McGilchrist, I. (2019). *The master and his emissary: The divided brain and the making of the western world.* London, UK: Yale University Press.

Mela, C. (2017). The therapeutic model of group analytic psychotherapy in brain's plasticity modification and expression, in patients with cognitive and psychiatric disorders: A hypothesis of neuron-Immune-analysis and neuron-Immune-modulation. *Psychiatria Danubina,* 29(3), 389-398.

Mela, C. (1999). Bridging brain and soul: The dialect of psycho-neuro-immunology. *The 11th European Symposium in Group Analysis.* Budapest, August 1999.

Pines, M. (1984). Mirroring in group analysis as a developmental and therapeutic process. In T. E. Lear (Ed.), *Spheres of group analysis* (pp. 20-28). London, UK: Group-Analytic Society Publications.

Pines, M. (Ed.). (1983). *The evolution of group analysis.* Oxfordshire, UK: Taylor & Francis.

Pines, M. (1998). *Circular reflections: Selected papers on group analysis and psychoanalysis* (Vol. 1). London, UK: Jessica Kingsley Publishers.

Rustomjee, S. (2016). *From contempt to dignity.* London, UK: Karnac Books.

Solomon, G. F. (1987). Psychoneuroimmunology: interactions between central nervous system and immune system. *Journal of Neuroscience Research, 18(1),* 1-9.

Schore, A. N. (2017). Playing on the right side of the brain: An interview with Allan N. Schore. *American Journal of Play, 9(2),* 105-142.

Urlić, I. (2004). Trauma and reparation, mourning and forgiveness: The healing potential of the group. *Group Analysis,* 37(4), 453-471.

Urlić, I., Urlić, I., Berger, M. E., & Berman, A. (Eds). (2010). *Victimhood, vengefulness, and the culture of forgiveness* (2nd edition). New york, NY: Nova Science Publishers.

SCALES

Forgiveness Scale
Kamat, V. I., Jones, W. H., & Row, K. L. (2006).. Assessing forgiveness as a dimension of personality. *Individual Differences Research,* 4(5), 322–330.

Transgression-Related Interpersonal Motivations Inventory
McCullough, M. E. (2013). *Transgression-Related Interpersonal Motivations Inventory (TRIM-18).* Measurement Instrument Database for the Social Science. Retrieved from www.midss.ie.

Forgiveness Likelihood Scale
Rye, M. S., Loiacono, D. M., Folck, C. D., Olszewski, B. T., Heim, T. A., & Madia, B. P. (2001). Evaluation of the psychometric properties of two forgiveness scales. *Current Psychology, 20(3)*: 260-277.